

REMARKS

Claims 1, 4, 5, and 7-9 are presently pending in the application.

Claim 1 has been amended to incorporate the subject matter from claims 2 and 3, now canceled. Claims 4 and 5 have been amended to correct the dependency. No new matter has been added by these amendments, and entry is respectfully requested.

Rejection Under § 103(a) Based on Nakazato in view of Minami or Nishikawa

In the Office Action, the Examiner has again rejected claims 1-5 and 7-9 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,569,818 of Nakazato ("Nakazato") in combination with U.S. Patent No. 5,792,733 of Minami et al. ("Minami") or U.S. Patent No. 5,245,070 of Nishikawa et al. ("Nishikawa"). Briefly, the Examiner again argues that Nakazato teaches a lubricating oil composition having specific phosphorus, sulfur, and sulfated ash contents which comprises: (a) a major amount of a specific mineral base oil having a low sulfur content, (b) an ashless alkenyl or alkyl-succinimide dispersant or derivative thereof, and (c) a metal-containing detergent such as an alkali metal or an alkaline earth metal salt of an alkylsalicylic acid. The composition may allegedly include other metal detergents, such as sulfonate detergents, (d) a zinc dialkyl-dithiophosphate in an amount of 0.01 to 0.1 weight % in terms of phosphorus content, and (e) an oxidation inhibitor which may be a phenol compound or an amine compound.

The Examiner further argues that Nakazato teaches that the lubricating oil compositions may contain other auxiliary additives, such as phosphoric acid esters and phosphorous acid esters. The Examiner acknowledges that Nakazato does not teach or suggest the claimed specific phosphorus acid ester compound, a triphosphate of formula (1). However, the Examiner argues that such triphosphate compounds are well known in the art as antiwear agents in lubricating oil compositions, as evidenced by Minami or Nishikawa. The Examiner thus concludes that it would have been obvious to one having ordinary skill in the art at the time of the invention to have added the triphosphate compound of Minami or Nishikawa to the oil composition of Nakazato if its known imparted properties were so desired.

In response to Applicants' previous arguments, the Examiner takes the position that superior properties are not observed for Example 1 and for all of the compositions that do not contain zinc dialkyldithiophosphate relative to all of the compositions that do contain zinc dithiophosphate, and further that the results presented are not commensurate in scope with the claims. Applicants respectfully traverse this rejection as follows.

As previously explained on the record, the presently claimed invention is directed to a lubricating oil composition which contains, in part, a specific salicylate detergent having a metal ratio of 3 or less. The advantageous effects achieved by the presently claimed composition are clearly demonstrated in Tables 1 and 2 of the present application. For example, the composition of (inventive) Example 9, which *contains no ZnDTP* and contains a calcium salicylate detergent with a metal ratio of 2.7 (within the claimed range) exhibited better slipping velocity in the LFW-1 boundary friction test than the composition of Comparative Example 3, which contains the same amount of the same salicylate detergent, but also *contains ZnDTP*.

Further, the composition of (inventive) Example 1 (containing no ZnDTP), which is identical to Example 9, exhibited better base number retaining properties in the ISTO test than the composition of Example 2, which contains ZnDTP and the same salicylate detergent in the same amount. Similar superior results were exhibited by the compositions which lack ZnDTP relative to the compositions which contain this component. These results clearly demonstrate the superior results that are achieved by including the claimed salicylate detergent and in the absence of ZnDTP.

As previously explained on the record, Nakazato teaches a lubricating oil composition having specific phosphorus, sulfur, and sulfated ash contents and containing: (a) a mineral base oil, (b) an ashless alkenyl or alkyl-succinimide dispersant, (c) a metal-containing detergent, (d) ZnDTP in an amount of 0.01 to 0.1 wt % in terms of phosphorus content, and (e) an oxidation inhibitor. The Examiner argues that the ZnDTP is contained in the Nakazato composition in a very minor amount of 0.01 wt% in terms of P content, and that it has been held that the elimination of an element is obvious if the function of the element is not desired.

Applicants again respectfully traverse this argument. As shown in the Table at col. 13 of Nakazato, ZnDTP is contained in all of Examples 1-10; the P content of 0.03 wt% in each of these Examples is derived only from ZnDTP (see Example 1 at col. 10). It is shown that even a very small P content of 0.03 wt%, which is very close to the 0.01 wt% lower limit of Nakazato,

is sufficient for providing the resulting compositions with desirable properties, such as high temperature detergency as evidenced by the hot tube test data. The amount of 0.01 wt% taught by Nakazato is thus an effective minimum amount required to provide the desired properties.

As previously explained, Nakazato teaches that the ZnDTP compound preferably contains an alkyl or alkylaryl group having 3 to 18 carbon atoms. Particularly preferred are alkyl groups derived from a secondary alcohol or a mixture of secondary and primary alcohols, since the latter are taught to provide high heat resistance (col. 6, lines 30-37). Applicants respectfully cannot understand why one skilled in the art would have been motivated based on Nakazato to omit a component which is taught to be essential and which is taught to provide desirable high heat resistance. If such a component were intended to be optional, it would have been included by Nakazato in the list of *optional* auxiliary additives described at col. 7, line 59 to col. 8, line 11. Applicants do not agree that one would have been motivated to eliminate ZnDTP from the lubricating oil composition in order to eliminate high heat resistance (high temperature detergency) of the composition.

The Examiner cites MPEP § 2144.04 as teaching that “omission of an element and its function is obvious if the function of the element is not desired.” The MPEP describes the case cited by the Examiner (*Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989)):

The claims at issue were directed to a method for inhibiting corrosion on metal surfaces using a composition consisting of epoxy resin, petroleum sulfonate, and hydrocarbon diluent. The claims were rejected over a primary reference which disclosed an anticorrosion composition of epoxy resin, hydrocarbon diluent, and polybasic acid salts wherein said salts were taught to be beneficial when employed in a freshwater environment, in view of secondary references which clearly suggested the addition of petroleum sulfonate to corrosion inhibiting compositions. The Board affirmed the rejection, holding that it would have been obvious to omit the polybasic acid salts of the primary reference where the function attributed to such salt is not desired or required, such as in compositions for providing corrosion resistance in environments which do not encounter fresh water.

In such a situation, if the metal was to be used in a non-freshwater environment, it would have been reasonable to omit from the corrosion-inhibiting composition the component which provided corrosion resistance in freshwater, since such a component would have been superfluous. The resulting composition would still be expected to provide the same corrosion resistance, albeit in a different environment.

In contrast, regarding the present application, the Examiner is arguing that one skilled in the art would have been motivated to omit ZnDTP from the Nakazato composition in order to provide a lubricating composition with inferior high temperature properties. Nakazato teaches the lubricating oil compositions are useful in motor driven vehicles using low sulfur hydrocarbon fuels, particularly diesel engine-mounted vehicles (col. 3, lines 54-56), and that the compositions have stability at high temperature so that they can meet exhaust gas regulations (col. 2, lines 30-32). Accordingly, based on the teaching of Nakazato, the modified composition proposed by the Examiner would be an inferior composition which would not meet the objectives of Nakazato. The proposed composition would not be a composition that provided the same properties as the Nakazato composition but was for use in a different environment. Accordingly, Applicants respectfully submit that there would have been no motivation to modify the Nakazato composition as proposed by the Examiner.

As demonstrated above, it would not have been expected based on Nakazato that elimination of ZnDTP would yield a composition that exhibits the properties of the presently claimed composition. Further, since Nakazato is silent as to the properties (such as metal ratio) of the salicylate detergent, the criticality of the metal ratio would not have been expected based on Nakazato. For at least these reasons, the presently claimed composition would not have been obvious based on Nakazato, and even modification of the Nakazato composition to include a triphosphate compound of Minami or Nishikawa would still yield a composition containing ZnDTP, since neither of the secondary references would provide a motivation for omitting ZnDTP from the Nakazato composition. The proposed combination would also not contain the claimed salicylate detergent having a particular metal ratio.

Accordingly, no *prima facie* case of obviousness has been established based on the proposed combination of references, and reconsideration and withdrawal of the § 103(a) rejection based on Nakazato in view of Minami or Nishikawa are respectfully requested.

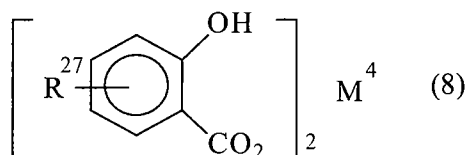
Rejection Under § 103(a) Based on Ho in view of Minami or Nishikawa

The Examiner has also rejected claims 1-5 and 7-9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,001,780 of Ho et al. ("Ho") in view of Minami or Nishikawa. The Examiner argues that Ho discloses an ashless lubricating oil composition that comprises: (a) a major amount of base oil of lubricating viscosity; (b) from about 1 to 6 wt% of

an untreated borated succinimide dispersant; and (c) from about 1 to 6 wt% of a borated succinimide dispersant. Ho allegedly teaches that the lubricating oil composition may contain other additive components, including metal detergents such as metal salts of hydroxy alkyl or alkenyl aromatic compounds, antioxidants, including phenolic-type and amine-type compounds in an amount of about 0.05 to 3.0 wt% per total amount of the engine oil, and antiwear agents, including phosphates and phosphites. Ho allegedly allows for the addition of extreme pressure agents to the lubricating oil compositions, including zinc dialkyldithiophosphates and six other types of extreme pressure agents, but does not require the addition of zinc dialkyldithiophosphate to the composition.

The Examiner acknowledges that Ho does not teach adding to the composition a specific phosphorus acid ester compound, that of a triphosphate having Formula (1) as claimed. However, the Examiner argues that, as taught by Minami and Nishikawa, described previously, such triphosphate compounds are well-known in the art as antiwear agents in lubricating oil compositions. Accordingly, the Examiner concludes that it would have been obvious to one having ordinary skill in the art at the time of the invention to have added the triphosphate compound of Minami or Nishikawa to the oil composition of Ho because Ho allows for the addition of phosphates and phosphites to the lubricating oil compositions as anti-wear agents. Applicants respectfully traverse this rejection as follows.

One of the critical components of the presently claimed composition is an alkali metal or alkaline earth metal salicylate detergent having a particular metal ratio of 3 or less. Ho does not teach a *metal salicylate* and thus does not teach the claimed metal ratio thereof. Ho teaches that a metal detergent may be included, including “sulfurized or unsulfurized metal salts of multi-hydroxy alkyl or alkenyl aromatic compounds” (col. 5, lines 40-41) and six other general classes of compounds. This general teaching would not lead one skilled in the art to a *salicylate*, such as the salicylate having formula (8) below (present application page 21, line 13), which is not a “multi-hydroxy” aromatic compound. In fact, based on the numerous possible metal detergents taught by Ho, there would have been no motivation to select any specific metal compound relative to any other.



Therefore, it would not have been expected based on Ho that utilizing a specific metal salicylate and omitting ZnDTP as claimed would provide the results exhibited by the presently claimed composition. Accordingly, Applicants respectfully submit that even the proposed combination of Ho with Minami or Nishikawa would not teach or suggest all of the claimed elements, and further that the results exhibited by the presently claimed composition would not have been expected based on the proposed combination. Reconsideration and withdrawal of the § 103(a) rejection based on Ho in view of Minami or Nishikawa are respectfully requested.

In view of the preceding Amendments and Remarks, Applicants respectfully submit that the pending claims are patentably distinct from the prior art of record and in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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Enclosure: Petition for Extension of Time (one-month)